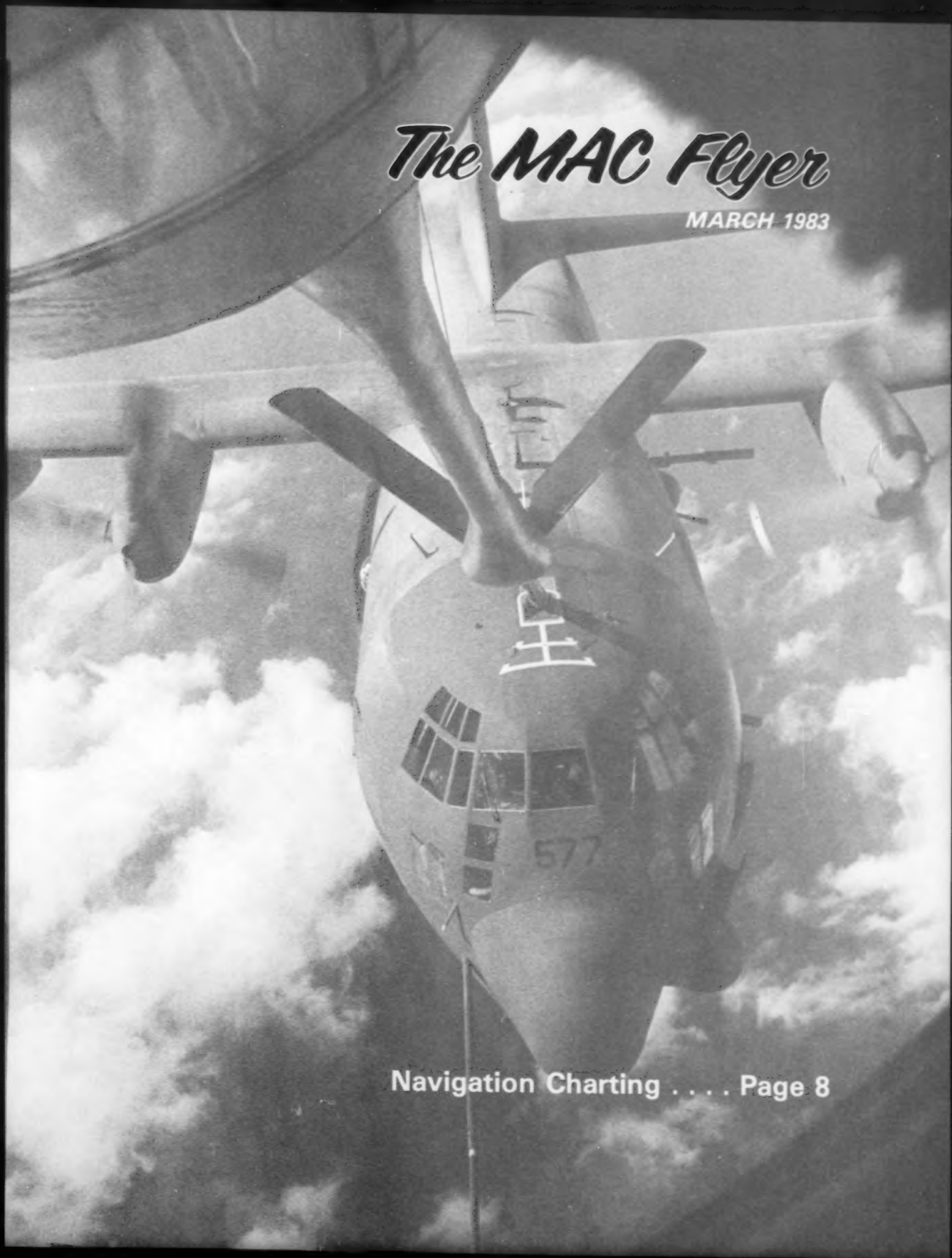

The MAC Flyer

MARCH 1983

Navigation Charting . . . . Page 8

The MAC Flyer

MILITARY AIRLIFT COMMAND

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For Greater Safety and Efficiency in MAC Air Operations.

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The MAC Flyer is published by the Directorate of Safety, Military Airlift Command. The contents are informative and not regulatory or directive. Names of people and places in mishap stories are representative and not necessarily of the aircraft or equipment involved. Information in any article may not be construed as incriminating under Article 31, UCMJ.

Contributions, comments and criticisms are welcome. Write: *The MAC Flyer,* HQ MAC/IGFE, Scott AFB, IL 62225; or call 618-256-3534, or Autovon 638-3534. The editors reserve the right to make any editorial changes in manuscripts which they believe will improve the material without altering the intended meaning.

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Cover: AC-130H Spectre refuels in flight.
Photo by SSgt Adriane Delaine.

The Deadline Cometh

La tiempo esta ahora. Le moment est venu. Die zeit ist jetzt. Yes, my friends, the time is now! The moment has arrived. The 1983 MAC Flying Safety Writing Contest, begun only last November, ends precisely at the stroke of midnight, 31 March 1983, and we need your entry—NOW.

Why should you spend your valuable time writing a story or poem with an aviation safety message for us? A very good question! In your flying experiences or knowledge of flying operations, you just may have some nugget of knowledge tucked away that could prevent a mishap from occurring. Through your literary effort, you can prevent others from making that mistake. The purpose of the Flying Safety Writing Contest is to promote flying safety in the command, and that can mean lives saved! If your story were to save only one life, then it's well worth your effort to create it!

But there are some tangible benefits for *you*, as well. By entering the contest and following the rules below you earn: (1) a free 1-year subscription to *TMF* (value $17) and (2) a C.R. Terror T-shirt (rare and priceless in value). If your entry is selected as one of our 12 winners, you are awarded an official contest prize. First, second, and third-place winners receive handsome desk sets. The nine honorable mention winners receive engraved wall plaques.

We'll publish the names and units of all twelve 1983 winners in the July issue of *TMF* along with the first-place winning entry. Your entry should be postmarked NLT 31 March 1983. Include a brief autobiography, address, phone number and T-shirt size on the cover sheet of your article. The deadline is indeed here, so send us your entry today.

The Rules

The 1983 MAC Flying Safety Writing Contest is conducted according to MACR 900-3 and the following rules. All entries must be original, unpublished and postmarked no later than 31 March 1983. Stories must be between 1,000 and 3,000 words long (about 6 to 14 double-spaced typed pages); poetry should be about 75 to 100 lines. Entries must contain an *aviation safety message*. Manuscripts must be double-space typed and submitted in *two copies*. Identify entries by title only, and attach a cover sheet showing the author's name, address, duty phone number and unit. Also, the cover sheet should contain a brief autobiography.

The contest is open to anyone. Entries qualifying under the above rules earn their author a free C.R. Terror T-shirt *(so indicate your size)* and a free 1-year subscription to *The MAC Flyer*. However, contest prizes (desk sets and plaques) may only be awarded to military and civilian employees of the Department of the Air Force or Air Reserve Forces. Other entrants may be selected for Honorable Mention in a Special Category. All winning stories will be published in *The MAC Flyer*. Entries should be addressed to:

Safety Writing Contest
HQ MAC/IGFE
SCOTT AFB IL 62225

It's Never Too Late

Each crewmember *forgot one little thing.*

by Colonel Roy B. Dille, Jr.
21st Air Force Safety
McGuire AFB, New Jersey

The newspapers' headlines could read: "C-130 Crashes--No Survivors," "C-141 Crashes--No Survivors," "C-141 Hits Mountain -- No Survivors." After each of these tragic aircraft accidents, a mishap investigation board is convened and since there are no survivors to tell the tale, many questions remain unanswered.

What really happened? How could an aircrew fly an apparently mechanically sound aircraft into the ground? What sequence of events led up to the mishap? What action could the supervisors, pilots or other crewmembers have taken to prevent the tragedy?

The human factors contributing to these tragedies are lost! *Or are they*? If history repeats itself, and unfortunately, it probably will, the causes of these mishaps have not disappeared. The same human factor errors are still being committed by crewmembers today. Fortunately, many aircraft mishaps do not claim the lives of those on board. In these cases, the survivors can provide the mishap investigation team with information and inputs that might not have otherwise surfaced during the investigation. Another untapped source of information which can be used for mishap prevention comes from "close call" or "near mishap" incidents. Since these "near mishaps" are not usually reported, valuable human factor exchange is lost. So, in the interest of accident prevention, let me share one such "close call."

Honorable Mention, 1982 MAC Flying Safety Writing Contest

This particular mission was a routine cargo run from Dover AFB, Delaware, to Mildenhall AB, United Kingdom, with an enroute RON at Goose Bay, Labrador. The aircraft commander was an instructor pilot with over 3,500 hours in the aircraft. The copilot was a brand new first pilot with 1,000 hours experience. The rest of the crew were highly qualified and experienced in the C-124. At that time, a copilot could not fly a line mission from the left seat until he became a first pilot. Since the right-seater was a new first pilot, the aircraft commander had briefed him prior to departure from home station that he would "swap legs" with him on this trip, if there was nothing out of the ordinary.

The leg from Dover to Goose Bay was one of those routine flights that one quickly forgets. The aircraft commander was in the left seat for the leg. You're probably wondering what bearing this normal situation and insignificant detail could have in this story? A great deal, my friend, since it was the first event, in a sequence of many to follow, that made this story possible.

After an uneventful crew rest at Goose Bay, the aircrew was alerted for the flight to Mildenhall. The copilot naturally looked forward to flying this leg. Since no unusual problems were anticipated, the aircraft commander delegated all AC related duties to the copilot. This was it—the copilot's first chance to shine, so everything had to be done just right—*don't forget a thing*. The flight plan indicated 8 hours and 53 minutes enroute with the weather essentially clear. Mildenhall arrival weather was forecast to be 3,000 feet overcast, 3 miles visibility, with light and variable winds. As the crew processed through ACP (Airlift Command Post), it was obvious the copilot had done a thorough job of flight planning. Not even the sharp-eyed ACP duty officer could detect a flaw in the flight plan.

"On course, on glide path." The phrase was hypnotic.

At the aircraft too, the copilot *didn't miss a trick*. He thoroughly reviewed all the forms and insured the exterior and interior walkarounds were completed. At last, the preflight was complete. Now it was time for the copilot to climb into the left seat and "do his thing." Engine start, taxi, takeoff, the standard instrument departure; *he remembered everything* and executed them flawlessly. After level-off, the crew settled into their normal inflight duties. The copilot conducted a ditching drill and made sure they had HF radio contact established before oceanic crossing.

Approximately 3 hours from Mildenhall, a phone patch was established with NAACP (North Atlantic Area Command Post). The crew passed a block time of 1450Z and their maintenance status to the NAACP. They asked for the Mildenhall forecast for the time of arrival, and were told the weather was expected to be 3,000 feet overcast, 3 miles visibility, with light and variable winds. Approaching Mildenhall, the copilot passed an arrival message and requested a weather update and the landing runway. ACP told them runway 29 was the active and the weather was the same as passed by the NAACP.

Expecting a fairly straightforward approach, the copilot briefed the crew to expect a PAR to runway 29. He then settled back into the left seat to fly the descent, approach and landing. Mildenhall approach assumed control of the aircraft and vectored it to runway 29 for a PAR approach. Approach control called the current Mildenhall weather "3,000 feet overcast, 3 miles visibility, with winds light and variable." Nothing had changed.

The copilot *didn't forget a thing*. Checklists, briefings, aircraft configuration, backup approach, backup radios and missed approach were all accomplished and reviewed. The GCA final controller was loud and clear.

"Ten seconds to glide path. Begin descent, now. On course, on glide path. On course, on glide path." This was the only statement the controller repeated throughout the entire approach. "On course, on glide path." The copilot felt good about himself. He had flown an excellent leg from Goose Bay to Mildenhall and now was flying a

perfect approach. "On course, on glide path." This repeated phrase had a hypnotic effect on the crew and gave them a feeling that everything was okay.

The copilot, however, *did forget one little thing.* The altimeter was never brought into his instrument cross check.

"On course, on glide path."

The aircraft commander still in the right seat, was busy looking for the runway. He didn't crosscheck his instruments because the weather was supposedly 3,000 and 3, and the copilot was flying an excellent approach. At this point, the AC *forgot one little thing.* He failed to call 100 feet above GCA minimums.

"On course, on glide path."

The navigator who was monitoring the approach also *forgot one little thing.* He failed to call 50 feet above GCA minimums.

"On course, on glide path."

At this point, the GCA controller *forgot one little thing.* He failed to state, "GCA minimums, if runway not in sight, execute a missed approach." The GCA approach continued.

Without warning, the aircraft touched down—but where?

"On course, on glide path."

Without warning, the aircraft touched down—but where? The runway? A taxiway? The ground? A building? The copilot now noticed the altimeter for the first time during the approach. It indicated field elevation. A simultaneous glance outside revealed zero/zero weather conditions. The copilot could not confirm where the aircraft was. He yelled, "Go around, MAX power!" and initiated an instrument takeoff. Approximately 200 feet in the air the aircraft broke into the clear (3,000 feet overcast, 3 miles visibility), and a look outside disclosed the aircraft was directly over the runway centerline with a dense fog bank covering the first one third of runway 29. The landing gear was left extended and a VFR teardrop approach and landing was executed to runway 11.

On landing, the aircraft rolled approximately 300 feet into the fog bank. It was stopped on the runway and the tower was advised of the situation. The airfield was then closed to traffic and the aircraft shut down. The fog was so thick that the runway was not visible from the cockpit.

The newspapers' headlines could have read: "C-124 Crashes at Mildenhall—No Survivors." The mishap investigation board could have assumed the cause to be aircrew error, pilot error or undetermined. But they never could have confirmed it.

This "close call' occurred almost 20 years ago. If this crew had shared their "near mishap" with others, it might have possibly prevented subsequent MAC accidents. By sharing this story now, I hope to prevent this type of "accident waiting to happen."

ABOUT THE AUTHOR

A graduate of Arizona State University, Colonel Roy B. Dille, Jr. received his commission through Air Force ROTC. He graduated from undergraduate navigator training in 1956 and flew C-97s at Travis AFB, his first rated assignment. After completing pilot training at Laredo AFB, Texas in 1961, Colonel Dille was assigned to the 31 MAS, Dover AFB, where he served as a C-124 flight examiner pilot. He has also served as the 57 MAS commander at Altus AFB and the 3 MAS commander at Dover AFB. Colonel Dille's other assignments have included a tour in the Clark command post and a tour as the 608 MASS commander at Ramstein. A command pilot with over 11,000 flying hours, Colonel Dille is the current Director of Safety for Headquarters, 21st Air Force at McGuire AFB.

MAC INDIVIDUAL FLYING-HOUR MILESTONE AWARDS

Lt Col Thomas E. Convery, 728 MAS
Lt Col John P. Ohanian, 18 MAS
Maj Ernest T. Randall, 30 MAS
SMSgt Troy O. Brady, 20 MAS
SMSgt Henry H. Hedgecock, 20 MAS
SMSgt Carl T. Leever, 15 MAS
MSgt James A. Boatman, 732 MAS
MSgt Donnie C. Wine, 732 MAS
Capt Gerald P. Fitzgerald, 732 MAS
MSgt Robert C. Bloom, Jr., 30 MAS
MSgt Dietmar W. Boehme, 732 MAS
MSgt Henry F. Copley, 701 MAS
MSgt Leonard J. Gill, 732 MAS
MSgt Robert J. Kugler, 732 MAS
MSgt John S. Orlowski, Jr., 732 MAS
MSgt Jaime Rivera, 9 MAS
MSgt Mervin G. Walker, 732 MAS
MSgt Earnest H. Weaver, 701 MAS
MSgt Howard Woods, 732 MAS
TSgt David G. Brignola, 30 MAS
TSgt John M. Dunton, 732 MAS
TSgt Edward P. Miles, 9 MAS
TSgt Kevin D. Perry, 30 MAS
TSgt Albert J. Walcek, 30 MAS
SSgt Ronnie D. Chesser, 30 MAS
SSgt Jon P. Salisbury, 30 MAS

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Lt Col Geoffrey R. Hickman, 1400 MAS
Lt Col Donald Livingston, 732 MAS
Lt Col Kenneth L. Weyler, 732 MAS
Lt Col Roger C. Woodbury, 30 MAS
Maj David E. Brubaker, 732 MAS
Maj Steven I. Kassan, 438 MAW
Maj Joseph J. Kollar, 732 MAS
Maj Michael J. Kravitz, 57 MAS
Maj Don C. Richmond, 30 MAS
Maj David F. Schreiber, 30 MAS

TSgt Tommy L. Brown, 55 ARRS

(Ranks and units are those at time of award. See MACR 900-3 for details on how to apply for your own milestone award.)

Navigation Charting— the DOD Connection

The Defense Mapping Agency is our charting source.

by Captain Gale E. Clouse, Jr.
Associate Editor

Whether we fly for MAC, other Air Force commands, the Army, Navy, Coast Guard, or Marines, we need to understand the mapping, charting and geodetic (MC &G) products available to us. By simple definition: (1) Maps are used for ground operations of all types. (2) Charts are used for air and sea navigation. (3) Geodesy is the science of determining the size and shape of the Earth, the precise position of points on the Earth's surface and variations in the pull of gravity. Each of these is critical to the accuracy and guidance of modern aircraft and weapon delivery systems.

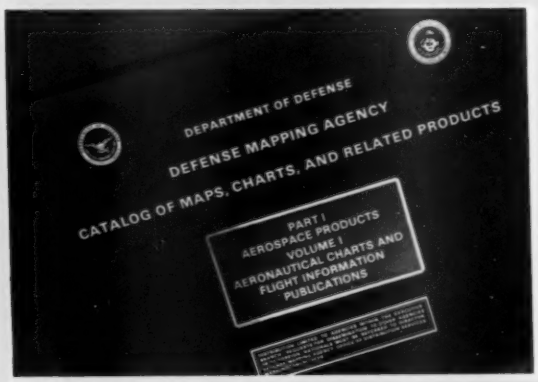
Concerning navigation charts, we have a new product called "oceanic planning charts," developed in 1982 expressly for MAC operations. Other navigation charts are more familiar to us, such as JOG Air, TPC, ONC, JNC-A, etc. We'll look briefly at these charts and the updating process, and consider how to get MC & G support for your unit's specialized needs. All these products are available through the DOD connection—the Defense Mapping Agency (DMA).

DMA Aerospace Center (DMAAC)

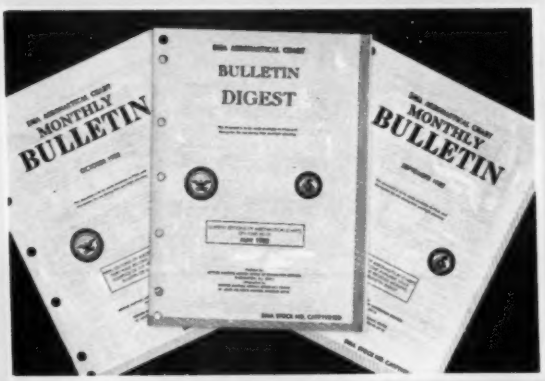
Aeronautical charts, digital data, flight information publications (FLIP), space mission charts, and special use navigation charts are just a few of the products provided by one component of DMA, DMAAC, located in St. Louis, Missouri. The center prepares aeronautical charts and digital data both manually and by computer using the latest techniques in portraying information derived from reference materials and aerial photographs.

In MAC, we see DMAAC's work most frequently in our local base operations facilities. When you need a navigation chart, the first place you'll probably look is the DMA Catalog of Maps, Charts, and Related Products. This black-covered 12x15 inch catalog is the source for ordering aeronautical charts from DMA. Catalog sections cover general information, requisitioning, automatic initial distribution, flight information publications, miscellaneous flight information products, navigation/planning charts and special purpose products. Companion publications to the catalog are the DMA aeronautical chart "Bulletin Digest" and "Monthly Bulletin." These products provide a listing of all current chart editions.

The key to receiving existing unclassified products for your unit or base is to obtain a DOD activity address designator code (DODAAD).



DMA Catalog of Maps, Charts, and Related Products: "Part 1, Volume 1 for Aerospace Products." This catalog is the source for ordering many MC & G products. Photos courtesy DMAAC/PA.



Bulletin Digest and Monthly Bulletin. These products provide a listing of all current chart editions.

Since most base operations functions or intelligence units have this code, it's simply a matter of having them contact the DMA Office of Distribution Services located in Washington, D.C. and requisition the particular chart you need.

MC & G—MAC Requirements

Headquarters MAC is currently authorized one full-time MC & G officer, who is assigned to the Intelligence Applications Division (MACOS INA). Captain Dave Baldwin, the present MAC MC & G officer, Autovon 638-3602, can assist your unit for your MC & G product requirements. Captain Baldwin is assisted in managing the MAC MC & G program by Master Sergeant Ted Bollerud, a target intelligence supervisor, who is involved in both intelligence and MC & G activities. MACOS INA can also help you obtain imagery (see AFR 95-8) for special products, such as drop zone acquisition.

Left to right: Captain Dave Baldwin and MSgt Ted Bollerud (MACOS INA) are the points of contact at Headquarters MAC for MC & G questions.

Captain Baldwin can also help identify MAC MC & G requirements to DMA during contingencies and crisis situations. DMA is organized to respond to short-notice requirements during contingencies by producing special chart products that MAJCOMs request for immediate use. The products delivered can help MAC, MAC AF and wing crisis action teams and the aircrews committed to the contingency operation.

Navigation Charts—Different Charts for Different Purposes

Oceanic Planning Charts

One of the newest chart series, oceanic planning charts (OPC), was first published in July 1982. It was developed specifically for MAC by DMAAC. OPC-1, 2, and 3 charts cover the North, Mid, and South Atlantic ocean areas, respectively. The charts portray selected radio aids, "fish points" (navigation reporting points identified by "fish" names), air defense identification zone (ADIZ) boundaries, and control area/flight information regions (CTA/FIRs). There are no-wind equal-distance lines between selected diversion airfields and a convenient distance scale on the chart for measuring other points.

The chart was initially developed for C-141 pilots as a transoceanic flight following aid. The C-141 crew draws their route of flight directly on the chart which can aid them in preflight or inflight planning. The chart can be used also for rapid inflight orientation. The charts in this series are printed back-to-back and assembled in pads of 50 sheets. C-141 crews making transoceanic flights without a navigator aboard are required to turn in these charts along with their computer flight plans at the end of each mission. Use of the oceanic planning charts by other MAC aircrews is optional, but encouraged. MAC is currently considering extending this chart series to the Pacific and Indian Oceans.

Joint Operations Graphic (Air)/JOG Air

Low-level flyers! This chart is designed with you in mind. Data is portrayed at a scale of 1:250,000 in which 1 inch equals 3.5 nautical miles, and terrain contours are provided at approximately 85, 165, or 330 foot intervals. JOG Air charts feature detailed patterns of cities, towns, roads, trails and railroads. It also includes cultural features, boundaries, and power transmission

lines and all known obstructions over 200 feet. This chart series is produced by another DMA component, the DMA Hydrographic/Topographic Center in Washington, D.C.

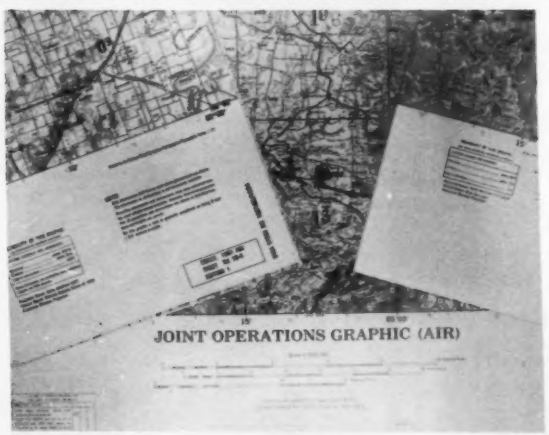
Tactical Pilotage Charts (TPC)

First initiated in 1967, the TPC is designed to satisfy a variety of mission requirements. The TPC supports high-speed radar and visual navigation at low altitudes (500-2,000 feet). Other uses of the TPC include mission planning and analysis, and intelligence briefings. With a scale of 1:500,000, 1 inch on a TPC equals 7 nautical miles. Sheetlines for the TPC are quadrant divisions of the operational navigation charts.

Operational Navigation Charts (ONC)

The worldwide series of ONC charts is designed for visual, celestial and radar navigation by aircrews who fly at high speeds (350 knots or more) and operate at medium altitudes (2,000-25,000 feet). In the absence of published tactical pilotage charts, the ONC is designed for low altitude use (500-2,000 feet). With a scale of 1:1,000,000, 1 inch on the ONC chart equals 14 nautical miles. Other uses of ONC charts include radio navigation, mission planning, and intelligence briefings. These charts, along with TPCs, are favorites with MAC aircrews for monitoring approaches into strange airfields.

In 1983 DMAAC will start publication of a new product—the area arrival chart. These new charts (see August 1982 *TMF*, "FLIP Through the Changes") will cover an area of 50 miles around selected major airfields. The area arrival charts consolidate the features and scale of the TPC with flight information overprinted on the terrain features. MAC has identified 49 airfields to be included in the area arrival chart series. The first chart to be published is the Albuquerque area arrival chart with a new projected availability date of mid-1983.



Series of Joint Operations Graphic (Air) Charts.

Jet Navigation Charts-A (JNC-A)

There are five charts in the JNC-A series. One covers the United States and the other four cover the north polar areas. The primary purpose of this chart is for high-altitude, long-range navigation over the polar areas and for training purposes in the U.S. These charts are especially useful for grid navigation when you head north to Thule or Sondestrom AB, Greenland. MAC has recently requested this chart series to be expanded to cover Central America.

Chart Updating Manual (CHUM)

All these charts and many others produced by DMAAC are periodically revised. The DOD CHUM is published semiannually, during March and September, and contains a listing of corrections for all DMAAC navigation charts. Supplements are published monthly and give cumulative updates since the last CHUM published. Chart discrepancies are compiled from the best available source material. Pipeline information, obstructions, and spot elevations are types of information found in the CHUM. In addition to

Selected Operational Navigation Charts.

this manual, aircrews should consult FLIP and notices to airmen (NOTAMs) to obtain all *known* chart discrepancies which could affect flight safety. It's important for crews to check each CHUM and supplement since complete chart revisions and new editions are published infrequently.

Chart Revisions

As we're all aware, maps, charts, digital data and other products have a tendency to become obsolete, so charts are updated periodically through the DMA product maintenance system. DMAAC establishes a probable obsolescence rate (POR) for its products and has accuracy and currency objectives for each series. DMAAC revises their charts based on these factors. Aeronautical information is more perishable than topographic information, and consequently, is updated more frequently. Most charts will give the latest date of air information. For example, ONC G-20, edition 5, has an air information currency date of 22 October 1981. To get a complete update, we'd need to check NOTAMs for FLIP changes and the CHUM for the latest navigation chart revisions.

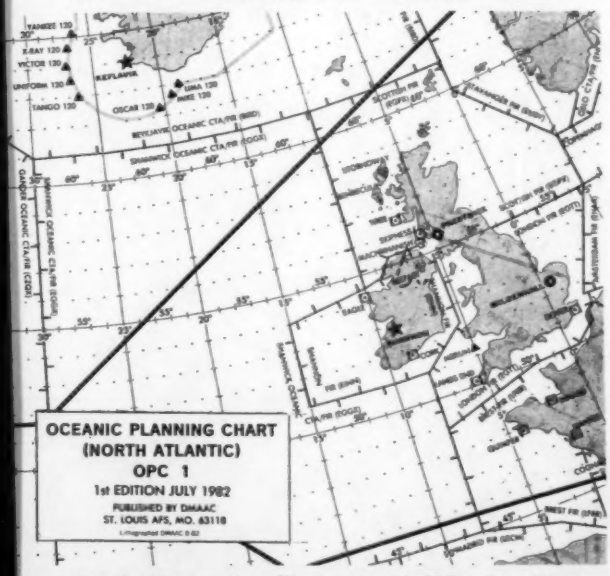
As a crewmember, you can start the revision process on charts. In the U.S. send your updates through the appropriate military channels to the Military Regional Representative for the FAA Region where an obstruction or chart error was observed. These addresses are conveniently listed in the CHUM. In foreign areas, information on obstructions should be submitted directly to Director, DMAAC/PP, St. Louis AFS, Missouri 63118.

The Future

DMA is currently transitioning from conventional to digital mapmaking. More than half of the effort at DMA is now directed towards the production of digital products, as opposed to traditional paper maps and charts. Within DOD we'll see digital products in mission planning simulators and command and control systems. DMA digital data is currently used in new C-130E simulators. In the future our military transports may contain CRTs which display strip charts built from digital DMA data bases. Increasing use of digital production techniques will greatly improve the accuracy of the more traditional printing processes.

Conclusions

DMA has created an impressive array of existing navigation charts and products for all military flyers. Used properly, these aids can help us to safely complete our diversified military flying tasks. As aircrews, we need to insure that we select the proper charts for our intended mission. Knowing the MC & G products, and helping to keep them current, can make our "fair or foul" weather flying—safer for all of us.



Oceanic Planning Chart (North Atlantic) OPC-1. 1st edition was published in July 1982.

Selected Tactical Pilotage Charts.

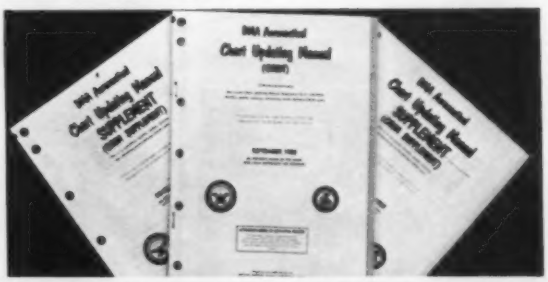


Chart Update Manual (CHUM) and CHUM Supplement contain a listing of all known DOD chart discrepancies.

Left to right: Capt John Quinn, CP; Maj LaMonte Kahler, IP.

Major LaMonte Kahler, 1551 FTS, and **Captain John Quinn, 71 ARRS,** were on a CH-3E student training mission south of Kirtland AFB, New Mexico. After completing a site evaluation, the student, Captain Quinn, started an approach to a remote landing site. Suddenly, 100 feet from the landing zone, Captain Quinn realized he had lost left pedal effectiveness—he couldn't stop the Jolly Green from turning to the right! He immediately aborted the approach, added power and turned right, flying down a ravine which was the prebriefed escape route. Captain Quinn explained the reasons for this maneuver to his instructor, Major Kahler, who then took the controls as the missed approach was established.

Carefully analyzing the precarious situation, Major Kahler decided to fly another approach at altitude to further isolate their tail rotor problem. During the approach, Major Kahler confirmed the loss of tail rotor effectiveness at 35 KIAS. Although total pedal travel was about normal, inputs of left pedal had very little effect on the turning performance. The only way to safely land the Jolly was with a run-on landing at the maximum allowable ground speed of 40 knots, minimizing tail rotor inputs.

As the crew started toward Kirtland, they completed all the necessary checklists, and briefed their actions. Using shallow turns and minimum control inputs, Major Kahler made a straight-in approach to runway 30 at Kirtland. After safely putting the CH-3 on the ground, Major Kahler made only right turns and returned the Jolly back to parking. Once the big helo was shut down and with the APU running, there was a severe binding in the left tail rotor pedal. Maintenance trouble shooting revealed later that the adjustable nut on the tail-rotor negative-force-gradient spring had backed off, causing the restricted tail rotor control.

Together, these two pilots worked as a team to safely recover a valuable aircraft and prevent a serious mishap. Their actions are truly worthy of the "Excellence in Airmanship" award.

RAF Flight Lieutenant Gale and crew, 41 MAS, Charleston AFB, S.C., had just taken off from Ramstein AB, Germany, when their C-141B experienced a catastrophic failure of the number 3 engine. They were, in

fact, just 100 feet in the air when it happened,and had just retracted the landing gear. There was a thunderous bang, followed by severe airframe buffeting and fluctuating number 3 engine instrument readings. The force of the engine failure was so violent, it blew the engine cowlings off the engine, damaging the wing flaps and causing them to jam in the takeoff position. Debris from the disintegrating engine also penetrated the number 4 engine cowling and pylon, caused major dents in the right gear pod, and caused damage to the right side of the fuselage and the bottom of the right wing.

Immediately after the engine failure, Flight Lieutenant Gale leveled the stricken Starlifter at 200 feet AGL to gain airspeed in the event the damaged number 4 engine should fail as well. Faced with a near-max gross weight aircraft, flaps stuck at takeoff position, unable to dump fuel due to the extensive damage to the aircraft, and with unknown damage to the number 4 engine, Flight Lieutenant Gale quickly decided to return to Ramstein, rather than risk the flight to Rhein-Main AB and its longer runway.

As the aircraft continued its slow climb to 2,000 feet AGL, the crew discharged a fire bottle into the still-smoking engine and prepared for the emergency landing. The flight engineers figured the landing data, determining the landing roll would require 7,500 of the 8,000 feet of runway available. The loadmasters briefed the 80 passengers and ensured the cargo was secure. The pilots, meanwhile, coordinated the emergency return and completed checklists and briefings.

Standing Left to Right: SSgt Joseph D. Phillips, LM; SSgt James E. Hart, LM; Flt Lt David Gale, AC; 1Lt Terrence F. Sapio, CP; Maj Ronald M. Durgee, N. Kneeling Left to Right: TSgt Robert H. Wells, FE; and TSgt Herbert P. Wade, FE.

Flight Lieutenant Gale flew a flawless approach, despite the high approach speed required by the heavy aircraft. He touched down near the approach end of the runway, and was able to slow the C-141 in time to turn off at the departure end of the runway. Because of the possibility of a brake and wheel fire, the aircraft was evacuated without incident immediately after clearing the runway. The superior airmanship and outstanding teamwork demonstrated by Flight Lieutenant Gale and his crew were directly responsible for the safe recovery of a valuable aircraft and its 87 passengers and crew. *TMF* salutes Flight Lieutenant Gale and his crew for their Excellence in Airmanship. ★

A helicopter pilot reveals the hazards of . . . Calm Winds

by Major John Ireland
HQ ARRS Rescue Plans
Scott AFB, Illinois

How can a mechanically sound helicopter with sufficient power to hover, crash at the end of an approach? That's exactly the question asked by investigators seeking the causes of three recent helicopter mishaps. Although these mishaps were different, they had some things in common : limited power was available; the approaches were flown to pinnacles; and the winds were essentially calm (light and variable). The hazards associated with flying pinnacle approaches and limited power approaches have been adequately addressed in recent months. Helicopter crews, however, need to better understand and respect the deceptive hazards of flying approaches in calm winds.

An investigation of military helicopter mishaps over the past 10 years revealed seven *approach* mishaps. In most cases, the investigators noted deficiencies in aircrew performance. But there were, of course, other problem areas: the approach was too steep or too shallow; the approach was too fast or too slow; temperature inversions were present; faulty power computations were used; or the crew lost sight of the pad. These accidents occurred at high and low pressure altitudes, hot and cold temperatures, and heavy and relatively light gross weights. Some crews had sufficient power to hover out of ground effect, but most were operating with limited power. All had power to hover in ground effect at normal hover heights. There is, however, one parameter common to all seven approach mishaps—calm winds.

Calm wind approaches have not received the emphasis they deserve, even though an approach in calm winds is more difficult than one flown with 10, 20, or even 30 knots of wind. A limited-power approach with calm winds has a definite element of risk. Crews recognize other maneuvers that have increased risk such as air refueling, night water hoist, night remote landings, low-level flying, and emergency procedures. Since the increased risk associated with these maneuvers is recognized, crews respect them and realize they cannot be complacent. But the hazards associated with a calm wind approach are not always recognized and, consequently, not respected.

A calm wind approach is indeed deceptive. When crews see a limp wind sock or smoke just hanging over the area, they aren't overly concerned. On calm wind days, what wind that does exist can be highly variable, as indicated by smoke markers dropped over land or water. A slight tailwind becomes a real possibility under these conditions. When operating with less than out-of-ground-effect power, extra caution is required. If an approach is not flown exactly as desired—*go around,* and the sooner the go around is initiated, the greater the chances of flying it successfully.

The primary problem with a calm wind approach involves slowing the aircraft just the right amount, at the appropriate time. You can't be too fast approaching the landing or you'll have difficulty stopping, and you can't make a rolling landing in a remote area, or a pinnacle for that matter. If you

slow too much and too soon, you may end up below translational lift before you enter ground effect (especially over sloping terrain or trees). When the same approach is flown with a decent headwind, it's easier to slow even a heavy aircraft, and translational lift is almost assured, even before the aircraft is definitely in ground effect.

During an approach, the nose of the helicopter is normally raised to slow to approach speed. The timing for this maneuver is especially critical during the later portion of a calm wind approach, for when the nose is raised, power settling is encouraged. In this phase of an approach, a fairly large amount of power is being used and as the nose of the helicopter is raised, the rotor wash moves forward. Without a headwind to blow the rotor wash behind the helicopter and without sufficient forward speed to allow the helicopter to settle in front of its rotor wash, the possibility of entering power settling is increased. This becomes more critical when combined with the sink rate that is normally present in the latter portion of an approach. Airspeed reductions should be made early in the approach when: (1) a large amount of power is not being applied; (2) forward airspeed is adequate to insure staying ahead of the rotor wash; and (3) the approach sink rate necessary to maintain a constant approach angle and closure rate is not yet established. Power increases slightly as the airspeed reduces below final approach speed, and increases significantly below translational lift. If an in-ground-effect hover is planned, maintain translational lift until entering ground effect. If an in-ground-effect hover can't be accomplished, insure out-of-ground effect power is available.

During calm wind approaches, a normal or slightly shallower than normal approach angle is recommended. Power requirements for a steep approach are relatively the same, but the margin for error is significantly reduced. (A steep approach, if used, must be flown perfectly.) This technique results in a slow, controlled, power-on approach. This type of approach may expose the helicopter to the hazards of losing power on final and not being able to make the pad or execute a go-around. ***However, approach accidents are occurring because of crew error, not engine failures.***

Another critical aspect of approaches to an area with calm (light and variable) winds is the effect on power required to hover. In light winds, most helicopters will require slightly more power to hover. The real hazard, however, is the variable direction which can result in a tailwind or crosswind. Not only is more power required, but the difficulty in maintaining directional control with the crosswind and a constant closure rate with the tailwind can lead to false visual cues for crewmembers. Recovery from these false visual cues will also require additional power.

Calm wind approaches can be flown safely. However, you must recognize the potential hazards of a calm wind approach. If you feel you are going to land fast or long, don't hesitate. Start a go-around, immediately! You can salvage a sloppy approach on a windy day when you have a large power margin, (a not altogether advisable practice to begin with), but think twice about trying to salvage *any* approach on a calm day.

Remember—approach mishaps are the most common type of Air Force helicopter accident. They almost always involve improper crew action and occur under calm wind conditions. Crews who are fully aware of the hazards involved can accomplish calm wind approaches—safely!

ABOUT THE AUTHOR

A native of Texas, Major Ireland graduated from Texas Tech University in 1967 and completed pilot training at Reese AFB in 1968. After a tour in C-141s at Norton AFB, Major Ireland entered helicopter transition training at Sheppard AFB in 1970. He has also served tours as an H-3 stan-eval pilot at the 1 SOW, 39 ARRW, and HQ ARRS. Other assignments have included HQ MAC as a plans and programming officer. A former commander of Det 14, 67 ARRS at Keflavik Naval Station, Iceland, Major Ireland presently serves at HQ ARRS as a plans officer.

1982 MAC Safety

The MAC Trophy for Flying Safety

Presented to the MAC air force or service with the most effective flying safety program as determined by flight mishap rate, severity, mishap causes, and mission.

21st Air Force

MAC Flight Safety Achievement Award

Presented to wings and geographically separated units that are accident-free and have an effective flight safety program during the calendar year.

Category One

60 MAW & 349 MAW (Assoc), Travis AFB

62 MAW & 446 MAW (Assoc), McChord AFB

63 MAW & 445 MAW (Assoc), Norton AFB

89 MAW, Andrews AFB

374 TAW, Clark AFB

375 AAW & 932 AAG (Assoc), Scott AFB

435 TAW, Rhein-Main AB

436 MAW & 512 MAW (Assoc), Dover AFB

438 MAW & 514 MAW (Assoc), McGuire AFB

443 MAW, Altus AFB

Category Two

316 TAG, Yakota AB

616 MAG, Elmendorf AFB

40 ARRS, Hill AFB

MAC Support Safety Achievement Award

Presented to units designated or functioning as military airlift support squadrons and mobile aerial port squadrons. Units selected must have exceptional quality of services and successful mishap prevention programs.

Det 3, 322 ALD, Hellenikon AB

603 MASS, Kadena AB

619 MASS, Hickam AFB

625 MASS, Torrejon de Ardoz AB

627 MASS, RAF Mildenhall

2 MAPS, Little Rock AFB

ty Award Winners

MAC Distinguished Flying Unit Safety Award

Presented to the best unit from among those receiving the MAC Flight Safety Achievement Award.

375 AAW & 932 AAG (Assoc), Scott AFB

MAC Safety Officer of the Year Awards

Primary Duty

Major Russell L. Cayler
41 RWRW, McClellan AFB

Additional Duty

Captain James A. Routt
54 WRS, Andersen AFB

MAC Safety NCO of the Year Awards

Primary Duty

TSgt Gail L. Rust
316 TAG, Yakota AB

SSgt Myron R. Randall
1550 ATTW, Kirtland AFB

Additional Duty

TSgt Robert R. Spencer
62 APS, McChord AFB

Safety Investigation Techniques—

A New MAC Course

A midnight call awakens you to the news of a MAC Class A flight mishap. A C-130 is missing during a low-level flight in mountainous terrain in Oregon. Air traffic control and the Aerospace Rescue and Recovery Service (ARRS) aircrews are conducting an electronic and a visual search. You've been notified to be ready for mishap investigation duties.

Four hours later, the wreckage of the C-130 is found 10 miles north of Mount Hebo Air Force Station, Oregon. MAC has now formed a mishap investigation board for the accident. A board president, pilot member, recorder, flight surgeon and maintenance member are named to investigate. You've just been selected as the investigating officer of this board and you've been well trained for this responsibility. Prior to being assigned as a MAC flight safety officer (FSO), you attended the 10-week FSO course taught by the University of Southern California at Norton AFB, California. In December 1982, you just completed a "graduate level course" in advanced investigation techniques at MAC Headquarters. You're confident of your abilities and ready for the challenging and arduous task ahead. The hypothetical situation we've just described is meant to familiarize you with the responsibility of the investigating officer as well as his or her need for training.

Using the philosophy that additional training results in higher quality investigation reports, MAC Safety has just offered its first "graduate level course." The "Advanced Investigation Techniques for Investigating Officers" course was held 29 November-3 December 1982 at Scott AFB.

Opening the 1-week long course was Brigadier General Philip S. Prince, the MAC Inspector General, who welcomed the 32 officers from across the command. He urged the participants to make the course "a working session" and to learn all they could about mishap investigation techniques. After this, the safety officers got down to business.

The 1-week course featured a number of highly qualified instructors. The first was Major Stan Santilli, a senior pilot assigned to the School of Aerospace Medicine at Brooks AFB, Texas. Major Santilli's 4-hour block of instruction covered human factors in mishap prevention. The human factors area has been the focus of a recent MAC safety initiative, The "Accident Waiting To Happen" (AWTH) program.

Next on the agenda was a 5-hour block of instruction covering human pathology. Lieutenant Colonel (Doctor) Charles J. Ruehle, a senior flight surgeon and Chief of the Division of Aerospace Pathology, Armed Forces Institute of Pathology, taught this portion. Dr. Ruehle has participated in over 50 accidents involving fatalities and gave his insights as a participating board member and

Photo of participants in Advanced Investigation Techniques for Investigating Officers Course held 29 November-3 December 1982 at Scott AFB, IL. All rows Left to Right: 1st Row (seated): Capt Doug White, 313 TAG; Capt Dale Cafferata, 1550 ATTW; Capt Harlan Ray, 435 TAW; Capt Richard Harris, 438 MAW; Major Stepehn Dabrowski, 443 MAW; Capt Wendy Campo, AFIT/CIRH; Mr. Vince LaChapelle, General Electric (Evendale, OH). 2nd Row (seated): Capt Greg Gaze, 63 MAW; Capt Kenneth Moore, 375 AAW; 1Lt Jeffrey Alderfer, 40 ARRS; Maj Alan Niedbalski, 437 MAW; Capt Robert Bruce, 437 MAW; Capt Larry Fariss, 834 ALD. Third Row (standing): Capt Frank Walsh, 53 WRS; Capt Carl Kintner, 316 TAG; Capt Lester Sousley, 345 TAS; Capt William Rouse, 317 TAW; Maj Ron Dukes, 314 TAW; Capt Richard Ferguson, 1550 ATTW; Capt Patrick Moran, 62 MAW; Capt Jerome Odettte, HQ ARRS; Capt John Blume, HQ ARRS; Maj Dwight Sterling, 436 MAW. 4th Row (back) (standing): Capt William Park, 375 AAW; Capt Richard Morris, 314 TAW; Capt Buzz Thomas, 317 TAW; Capt Tom Baugh, 436 MAW; Capt Willis Rice, 22 AF; Maj Gary Cave, 62 MAW; Capt Al Hider, 89 MAW; Capt Lloyd Hinze, 41 RWRW.

consultant. Following Dr. Ruehle's presentation, Captain (Doctor) Randy Provost, a flight surgeon at the Scott AFB Medical Center, discussed the flight surgeon's responsibilities during board investigations.

Mr. Vince LaChapelle, a J-79 systems safety specialist employed by General Electric, was featured next in a 2-hour block of instruction on engine damage analysis and fire pattern analysis. Mr. Lachapelle has over 30 years' experience in the aircraft jet engine field and has actively participated in over 300 mishap investigations.

The new MAC course also featured a number of other key safety topics taught by experts within their particular field. Some of the topics included cockpit damage interpretation, weather factors, aircraft structures, National Transportation Safety Board (NTSB) capabilities, and aircraft investigation officer techniques.

Mr. Sam Taylor from the Oklahoma City Air Logistics Center taught techniques for interpreting aircraft cockpit damage. Lieutenant Colonel Rich Rasmussen, 7th Weather Wing and the weather officer on the 1982 C-141 Class A mishap at John's Knob, Tennessee, lectured on weather factors in mishaps. Mr. Joe Tilson, an aircraft structures advisor with AFISC, gave the engineering view on fatigue failures. Mr. Frank Taylor, Director of the Bureau of Accident Investigation at the NTSB, spoke on the Board's capabilities. Under his supervision approximately 4,000 mishaps have been investigated by the NTSB. Major Mike Fagan, an AFISC helicopter expert, talked about investigation techniques. He related his participation in 14 mishap investigations to the attending MAC safety officers.

Finally, the Mishap Board seminar was one of the favorites among school attendees. Six seminar leaders who had participated as board members in previous MAC Class A flight mishap boards talked about some of the problems and challenges they encountered in conducting mishap investigations.

MAC's first safety refresher course is now history. Feedback from the 32 participants indicated that the course was highly regarded and much needed. A number of pertinent suggestions were given and will be incorporated into the next course to be held later this year. As a result of their hard work and study, 32 safety officers "in the field" are now better prepared for possible duty as investigating officers for Class A, B, or C mishaps. Our sincere hope is that they'll never have to use their newly-gained knowledge. ✭

An accident investigator making a visit to an accident site learns . . .

What It's Really Like

by Major Samuel Raines
U.S. Army Safety Center

It was a beautiful day—bright, clear and so very calm. Below me, the rolling countryside seemed so peaceful I drifted off into my own private thoughts, but not for long. The "whop-whop-whop" of the rotor blades of our UH-1 and the pilots' chatter in my headset jarred me back to reality.

"Coming up on the crash site, sir," the young warrant officer said in a matter-of-fact tone. "Wanna make a low pass overhead?"

"Roger," I replied. "Give me a couple of three-sixties to the left so I can get a good view."

"Will do, sir. Starting a left break now."

As I looked at the crash site below us, I was aghast. How could one single helicopter make such a mess of everything? I looked around our own aircraft. The UH-1 is a pretty solid bird. The one below me, though, was spread over an area about 200 yards long and 40 yards wide. It seemed broken into a thousand pieces and was still smoking in various places, even now, several hours after the crash. The ground showed mute evidence of the terrific force of the crash and was twisted and torn from the violent impact. Small trees had been cut, uprooted, and in some cases, completely destroyed. The initial impact point of the wreckage was easy to see and the rest of the wreckage had fanned out down a small hill into a creek.

The same questions I had asked myself so many times over the past 15 years once again began to form in my mind. What happened? What went wrong? Why did it happen? As a seasoned accident investigator, I was as anxious to solve this mystery as all the rest.

Before I had left the airfield for the crash site, I had been briefed on the particulars of the last flight of this UH-1. It had been a routine administrative flight with five people on board. The only cargo on the ill-fated Huey consisted of three cases of C-rations, two five-gallon Jerry cans of

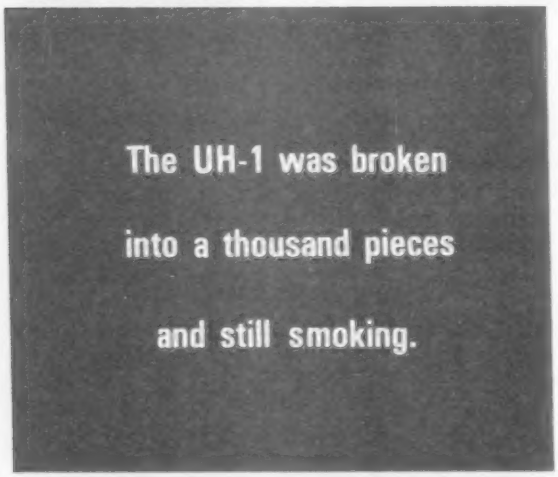
water, and some small engineering equipment. Now, as we neared the site, I recalled my final question to the briefer.

"Were there any survivors?" I asked. The reply had been stark and to the point.

"None!"

The pilot-in-command was an "old pro" with more than 3,000 hours and noted for his calm and safe approach to everything. He was, by all standards, a very mature and professional aviator, and was often heard to remark that he had had enough excitement back in '68 during the TET Offensive in 'Nam.

The copilot was a young fellow just recently out of flight school with a very bright future ahead of him. The crew chief was a very conscientious young lady who some said was the best in the battalion. She had just been selected as the "Soldier of the Quarter."



One passenger, a young PFC, was just along for the ride. It was his first helicopter flight and there was a rumor he was considering applying for the warrant officer flight program. The other passenger, a quiet, bespectacled lieutenant, had more academic degrees than a thermometer. He had been married only one month. On the surface, there were certainly no obvious problems with the crew, passengers or cargo.

As the wind blasted into my face through the open doors of the Huey, I glanced at my accident investigation team. They were all seasoned investigators, did their jobs well, and knew exactly what to do once we landed. The flight surgeon would supervise removal of the bodies and study the survivability aspects of the crash. He would also conduct the human factors investigation. The maintenance officer and his technical inspector would be all over the wreckage, analyzing every single part for mechanical problems. They would also take fuel, oil and hydraulic samples to determine if certain parts should be submitted for detailed analysis at the Corpus Christi Teardown Facility.

My recorder would be busy interviewing witnesses and ensuring that the proper photographs were taken. The UH-1 SIP (staneval pilot) would help study the unit records and crew qualifications, and conduct a thorough analysis of the flight up to the time of the crash. He would also help the maintenance officer carefully record and study all the instrument readings and positions of the flight controls.

Then there was Pete, the civilian air safety specialist. He had been investigating air crashes since before I was born. A true sleuth on a crash site, he was my technical expert and had a reputation for rooting out the cause of a mishap, sometimes with nothing more than a hunch to start with.

The safety officer of the mishap helicopter's unit was along to provide administrative and technical assistance. He sat quietly with a far-away look in his eyes. The AC had been his close personal friend and had saved his life in Vietnam. The night before, both families had spent the evening enjoying a backyard cookout.

There was also a team of pathologists en route from the Armed Forces Institute of Pathology. From the looks of things, this crash would keep them busy for a long time.

The inevitable strain showed on all our faces. In spite of our experience, we still had that sick, gut-rending feeling associated with a fatal aircraft accident.

As our pilot settled the Huey into the make-shift landing pad, I took a long, deep breath of clear, fresh air, because I knew it would be a long time before I could relax again.

"Sir, we're gonna shut down and wait for you if that's okay."

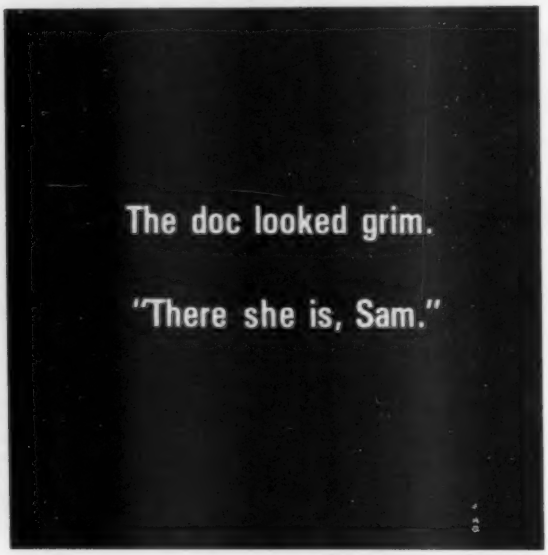
"Sounds good to me," I said. "Once we've finished the preliminary work, the medics may want to use you to haul the bodies to the hospital." I immediately saw a sick look come over the young pilot's face.

Before disconnecting my headset, I heard the pilot say, "I'd hate to have their job!" The fellow didn't know how much I hated it, too! I don't mind safety work, but I surely hated this part of it.

We regrouped the team at the impact point and began our initial walk-around and observation of the wreckage. I've seen many crashes in my day,

but I've never become accustomed to the brutal, stark reality of twisted and broken metal. As I walked through the debris, a combination of burning metal, wood, fuel, oil and hydraulic fluid permeated the air.

Gazing at the surrealistic scene, I was continually amazed at the destruction that occurs when 8,000 pounds of man and machine strike the earth at forces exceeding 80 times the force of gravity. I kept glancing at the Huey that brought us to the crash site. It looked like an aircraft. On the other hand, the aircraft scattered before me was identical, except the largest piece intact or recognizable was a portion of the tail boom.



At the impact point, the first objects identifiable were portions of the pilot's pedals and the landing light. Not far away was a helmet bag. There were literally hundreds of small parts, mostly unrecognizable. Not far away was a crushed door, a portion of a seat cushion and a flight helmet. There were deep cuts on the ground, probably from the main rotor blade as it tore itself to pieces. In one of the gashes on the ground, I also noticed a flight glove. Flight instruments were lying everywhere.

We were all having our own thoughts and I realized that about now the chaplain would be arriving at the dead AC's quarters. I regretfully wondered how his widow would react . . . and especially his 9-year old son. I knew they had been a very close family. *Had been!*

It's hard to realize how many miles of wiring are in a machine as complex as a helicopter, yet before us was wiring of all sizes and colors mixed in with a multitude of other debris. I could not step anywhere without touching some part of the wreckage. A portion of the main rotor stuck out of the ground about 5 feet.

We found the copilot's lifeless body lying next to one of the main rotor blades. I looked around my team, shocked with the realization of how a person can be normal, healthy and happy, and in a split second, cease to exist. I couldn't help but wonder how his 6-year-old daughter would react when "Daddy" wasn't there to tuck her into bed and help her say her prayers tonight. Her picture, torn and muddy, lay next to the cyclic.

"Over here, Sam."

I glanced over at the flight surgeon who was motioning me to come over and join him. A state trooper was pointing up into a small tree down near the creek. I made my way down to them, being careful not to disturb the wreckage.

The doc looked grim. "There she is, Sam," he said sadly. I looked in the direction of his outstretched finger. We had found the crew chief. I felt an old frustration rear its ugly head. Why, I asked myself. Why? Why?

The weight of my responsibility returned when the flight surgeon asked how soon we could move the bodies. As I moved back up the hill to brief the team on special requirements, many thoughts flashed through my mind. Why did these people have to die so violently? They were all good people deserving a full chance at life. Yet, they had come to a quick, horrifying end in the prime of their life. Their families were left behind to grieve, perhaps forever. What effect would these deaths have on the children? Only time would tell.

I was almost up the hill when the maintenance officer yelled at me. "Look at this!" He pointed to the tangle of high-tension wires wrapped around the mast. In spite of all my training which had taught me not to focus on the obvious until all the facts were known, I knew immediately this helicopter had hit wires.

Why?

Editor's note. *The above mishap is fictitious. You can be sure, however, that the sights and thoughts described here have been experienced time and time again by military and civilian accident investigators. This vivid account is presented so all aircrew members who read it can understand our sometimes emotional plea to follow accepted safety practices. Ask yourself one question as you read it. "Could it have been me?"*

—Adapted from U.S. Army *Aviation Digest*

AWTH's Corner

On Time—Safe or Not?

Primary factors/problems: Emergency condition, reversal of interpretation.

Contributing factors/problems: Poor technique, lack of knowledge.

The mission, part of a JCS exercise, involved carrying a load of cargo and pax from the West Coast to a Gulf Coast location, with an intermediate RON in the Midwest. During a routine scanner's walkaround some 3 hours after takeoff, a refueling vehicle was discovered to be leaking raw fuel. Emergency ventilation procedures were immediately started and the aircraft soon made a safe landing at the RON base. Before entering crew rest, the crew informed both maintenance and aerial port personnel about the leaking cargo. Due to the exercise in progress, the crew was billeted 1½ hours away from the base.

Following crew alert and another 1½ hour bus ride, the crew arrived at the aircraft to start their preflight. A quick check of the leaking refueler revealed a bag of absorbent material (kitty litter?) under the vehicle. Questioning both maintenance and command post personnel, the crew determined that maintenance had not been performed on the leaky vehicle. They then informed the ground support folks to "fix it, or get it off the airplane." Following considerable discussion, the decision was made to fix the vehicle, and the connections on the refueler were subsequently tightened.

Assured the problem was fixed, the crew completed their preflight and soon departed—complete with a full load of cargo and passengers. Once again, though, the vehicle began to leak fuel, filling the aircraft with fumes. The crew declared yet another emergency and quickly returned to their midwest departure base, once again landing safely. The author of this AWTH continues.

"We were all called into the command post. Two majors and a lieutenant colonel started to question us about our 8 minute delay on takeoff. Not one word about our emergency or the fact that a multimillion-dollar airplane, its crew, passengers and cargo were almost scattered all over the Midwest.

"My question and the reason for this letter is this: Are on-time-takeoffs the only score card MAC uses to judge its airlift capabilities? Are not the movement of cargo, the amount of cargo, and timely completion of each leg of a mission more of a gauge? If we take off 10 to 20 minutes late because of a maintenance problem that crops up at the last minute and do not have to air abort, then has the team effort failed? Is there really a problem?

"From talking and listening, an air abort is easy to explain. A late takeoff sends ripples throughout MAC. It is my feeling that the intent of the on-time-takeoff as a gauge has been perverted beyond all conceivable aspects. It is a hazard to crews, passengers, and aircraft. It has been used to threaten good officers on their OERs, and has caused a situation that is rapidly becoming intolerable to any self-respecting crewmember. Soon, mediocre and careless crews will replace professionals who have either quit or become mediocre themselves. It's time to take a very close look into this situation and make the proper changes."

Editor's Note: MAC Flight Safety is carefully monitoring all AWTH inputs. As trends develop, we will take action on them or forward them to other MAC directorates for headquarters level coordination and action.

DEJAVU

Torrejon de Ardoz Air Base, Spain (elevation: 1,994 feet)

Located in central Spain, Torrejon de Ardoz Air Base is 11 miles east of Madrid and only 3 miles east of Barajas International Airport. The nearest suitable military alternates are Zaragoza Air Base, 135 miles northeast, and Rota Naval Station, 266 miles southwest.

The minimum safe altitude within 25 miles is 9,300 feet. Numerous mountains in excess of 6,000 feet are located approximately 20 miles northwest of the base. A mesa, only 3 miles southeast of Torrejon, rises to 650 feet above airport elevation and becomes critically important when VFR or circling approaches are flown.

Torrejon has one runway 05/23, 13,400 feet long and 200 feet wide. Runway 23 is a precision runway with overruns, centerline lighting, and VASI. Circling is not authorized northwest of runway 05/23. When making departures using runway 23, aircrews should complete all turns within 1½ miles of the runway to avoid the dense commercial traffic at Barajas International. Instrument approaches at Torrejon include VOR, tacan, ILS/DME, PAR and ASR. "See-and-avoid" is a definite requirement because of the intense fighter activity at this sunny Spanish locale. Other hazards at this base include FOD in the shape of small stones, so please follow the published restrictions on the use of idle and reverse thrust.

—Adapted from AQP 38525

Runway 05. The turn to final has to remain close to the runway threshold because of the field's proximity to Barajas International Airport.

At 3 miles, runway 23.

On short final, runway 23.

C.R. TERROR

The Field-grade Flyboy Flubs Physiological Training.

"You get the beans and I'll get the burritos, Sammy," prompted the Ace of Aerospace.

"Burritos and beans for breakfast? Are you serious?" questioned C.R.'s favorite copilot.

"Absolutely! Positively, Sammy! Under normal circumstances I'd never touch a burrito for breakfast. Tacos, enchiladas, tortillas, and chili, yes. But a 'burrito,' never! But take courage, lad. We've got to face the hazards of a vertigon and the altitude chamber today. We'll need our 'wits' about us," instructed MAC's Most Senior Major.

Sammy, thinking C.R. had changed his mind on breakfast, ordered some "Beta Bits" letter oat cereal for the Paunchus Pilot along with some "Oak Toasties" for himself. C.R. managed to add the BX "Mexican Special" with jalapeno peppers to Sammy's order to round out his meal. With haste befitting their late arrival at Andrews-by-the-Sea AFB, C.R. wolfed down his morning repast. Sammy quickly gathered up the rest of the crew and called a bus for the short ride over to the physiological training building.

"Boss, how did you ever manage to get yourself, Blinky, Ty, Max, and myself all on the same altitude chamber flight?" wondered Sammy aloud. "Why, Ty and Blinky aren't even due for another 5 months."

"Administration, Sammy. Administration! I merely had the squadron scheduler set us up for joint training at the same time. Of course you know that's in line with my integral crew concept: 'the crew that trains together, planes together.' Catchy, eh Sammy?" queried C.R.

Sammy just moaned.

Minutes later the Quiet Quartet plus the Flatulent Flyboy filed silently into the brightly-decorated physiological training classroom.

"Your mission today, Major Terror and friends, should you choose to accept it (and you will), is to take an altitude chamber flight . . . first, ascending to 5,000 feet for an

ear and sinus check, followed by 30 minutes of prebreathing 100 percent oxygen prior to our climb to 35,000 feet . . . we'll conduct a hypoxia demonstration on the way down at 25,000 feet and a rapid decompression after descent to ground level," huffed Captain Hy Poxia, all in one breath, his face flushed from a lack of oxygen.

"Good grief," gasped the Ambient Aviator aloud. "This man has more hot air than the *Graf Zeppelin*. By the way, when's lunch?" the Rotund One asked. "It's never too early to start planning some suitable cuisine for my, er, our, hearty appetites."

"Glad you mentioned that, Major Terror. We'll be covering gas expansion during our lectures this morning. You'll need to avoid certain gas-producing foods at lunch today—for obvious reasons. Stay away from black-eyed peas, baked beans, cucumber salad, and, of course, the snack bar special—killer burritos," added Captain Poxia resignedly.

The Master Manipulator whispered to Sammy, "They give this story to the uninformed every 3 years, Sammy. Burritos don't affect you in the chamber. This is merely one of their scare tactics."

During the mid-morning break the Rhinestone Flyboy took a couple of 96-hour "Contract" cold medicine tablets to ease his wheezing, coughing, aching and runny nose.

"Boss, are you self-medicating?" Sammy quickly asked, observing his mentor's actions. "You can't take a chamber flight if you've got a cold."

"Of course, Sam , you're absolutely right. But I don't have a cold. My eyes are watering from the jalapeno peppers this morning and 'Contract' will dry up the resulting post-nasal drip. You wouldn't want me to soil the chamber's oxygen masks, would you?" defended the Ace of Alibis. Sammy moaned for the fifth time that day.

During lunch, C.R. managed to ignore Captain Poxia's stern warnings on smoking and greasy foods. Lighting up a gold ring Egyptian Oval, the Pudgy Pilot consumed half his weight in paella, tostadas, and the infamous cheese-covered "killer" burritos.

Back at the chamber an hour later, C.R. and friends got their oxygen masks and began to preflight their assigned stations in the chamber. "Have you finished your PRICE check, Boss?" asked Sammy.

"PRICE, Sammy? Speaking of price, did I ever tell you about the DeLorean I'm planning to buy. Seems my XKE Jaguar has finally bitten the dust, or rust, if you must know the truth. Remind me to get rustproofing included, will you?" added C.R.

"Right, Boss. But what I meant was the PRICE check. Remember the preflight oxygen check, PRICE. It goes: Pressure, Regulator, Indicator, Connection, and Emergency?" hinted Sammy.

"Naturally, Sammy," nodded C.R. managing to bring his fickle faculties to the task at hand.

After a quick intercom check, C.R. and Sammy were paired off as partners. As the chamber altitude was brought up to 35,000 feet, C.R. tried his turn at pressure breathing.

"Sammy, (gasp), Sam!" C.R.'s face reddened. "It's a little difficult to breathe. I don't feel any pressure."

"Boss, you're supposed to have a little difficulty breathing. It's part of the pressure

breathing training, remember?" Sam answered, trying to calm the Wheezing Warrior. After a quick glance at C.R.'s regulator, Sam flipped a lever. "It helps, though, if you've got your regulator set to 100 percent and on. Not 100 percent and *off*!"

"Merely testing your grasp of physiological detail, Sammy m'lad," explained the Ace of Aerospace, finally getting some air into his oxygen-starved brain.

After a descent to 25,000 feet, Sam and C.R. got ready for the hypoxia demonstration.

"You watch me, Sammy, while I do the questions on the worksheet in world record time. I don't get hypoxia symptoms quickly, so I'll probably be able to do your worksheet too. It's my stamina, m'lad, I've simply got great stamina," emphasized the Portly Pilot.

Dropping his oxygen mask, C.R. quickly picked up his worksheet and began reading. "Why don't they turn up the lights in here, Sammy?" asked C.R. after about 30 seconds with his mask off. "And look at this sloppy worksheet. Why even the type is blurred! Of course my head isn't feeling too great. I guess those four Terrorific 'tinis last night gave me a little hangover."

"My worksheet is clear," said Sammy. "How are you coming on your problems?"

"That's a good one, Sammy. Problems, I don't have any problems. I was voted the 'Field-grader Most Likely To Succeed' just last year." Turning blue, the Giddy Pilot giggled with glee.

Meanwhile, Captain Poxia, noting C.R.'s classic case of hypoxia, refastened the oxygen mask of the Smurf-colored Major. "I think you were about 30 seconds from passing out, Major. You were supposed to reconnect your mask when you noted some definite signs of hypoxia. You had blurred vision and euphoria for sure, and look at this," he noted, candidly holding up the worksheet filled with illegible scrawl. "You didn't even get one single problem right on your worksheet," scolded Captain Poxia.

"That's not the hypoxia, captain," C.R.'s right-seater defended his AC. "He just never learned to multiply back in Aviation Cadet training."

After a few quick breaths of 100 percent oxygen, C.R. was restored to his normal jovial self. "As I was saying, Sammy m'lad. Uh—what was I saying, Sammy?"

"You were ready for the descent, I believe, Boss," Sammy replied.

"Right you are, Sammy. Five to beam down, Scotty," C.R. continued, still a little light-headed, lapsing into Star Wreck jargon. As the altitude chamber's pressure was brought down towards ground level, C.R. leaped up from his seat. Furiously stomping around the chamber floor and waving his hand in a large arc in an up and down motion, C.R. screamed at the top of his lungs, "My head, my head!"

Captain Poxia directed the chamber operator to stop the descent of the flight, then raised the chamber altitude about 2,000 feet to alleviate some of the pressure of C.R.'s agonizing sinus block.

"Major, calm down, we'll clear your sinus block. Of course, it might have helped if you would have given the proper level-off sign to warn us," explained Captain Poxia.

"That's right, Boss. Waving your hand side-to-side is the level-off signal, remember?" courteously chirped in the Chipper Copilot.

A menacing glare from the Pained Pilot silenced Sam while Captain Poxia pumped half a bottle of nasal spray into C.R.'s bulbous nose. Choking, the Portly Pilot collapsed back into his chair as the pain subsided.

A few minutes later, the Well-exhausted Warrior, minus his head-shattering pain, completed his descent to ground level and was quietly escorted out of the chamber.

On the bus ride to the VOQ C.R. and Sammy began speaking again. "Too bad I missed the rapid decompression, Sammy. I remember flying my first overwater AC line check. We were at 28,000 feet when we blew the number 1 hatch. Had quite a few dignitaries aboard, too," C.R. spun yet another tale.

"Well, Boss, speaking of dignitaries, I hope you can explain to Colonel Fang about your cold and your need to go back and complete another rapid decompression," hinted Sam.

"Why Sammy, didn't I tell you?" C.R. explained. "We're all complete! Seems the chamber crew had already signed off our training records before the chamber flight was complete. Of course, Captain Poxia politely suggested I visit another chamber for my next refresher training."

"Might not be a bad idea, Boss," suggested Blinky.

"What, and miss the zesty burritos at Andrews-by-the-Sea?" challenged C.R. "I'd walk a mile for the BX snack bar 'Mexican special.' "

"And so you shall, Boss, and so you shall. The snack bar called and said they've got a summer flight jacket belonging to you," mentioned Sammy. "See you back at the VOQ." ✈

Flaps—Half Right

Improper landing configuration caused only minor damage to a C-130 last fall, but the potential for a serious mishap was there. The aircraft was on a training sortie and the crew was preparing for a night landing on a 5,000-foot lighted runway. Descent checklist completed, the pilot briefed a 100 percent flap landing. As the aircraft turned onto downwind, the crew ran the before-landing checklist and configured the aircraft with gear and 50 percent flaps. The aircraft was slowed to final approach airspeed on short final, and the landing lights were extended halfway and turned on. But the pilot neglected to call flaps 100 percent, and the crew did not remind him of the oversight. As the aircraft approached the threshold in a nose-high attitude, the Herk was slowed to touchdown speed. Committed to a landing at this point, the pilot suddenly realized his error and called for flaps 100 percent. The improperly configured C-130 touched down firmly in a nose-high attitude as the flaps passed through 70 percent. The landing roll appeared normal, and it wasn't until termination at home station that damage to the tail skid and both urinal drains was discovered. Caveat Aviatoris—Let the Aviator Beware!

Four and Twenty Blackbirds—And More!

A C-5 crew on a local training mission recently experienced a bird strike that is a candidate for "Ripley's Believe It or Not." The aircraft was on the first approach of the mission and had just descended through a 500-foot overcast. Continuing towards the runway, the crew observed no bird activity. As the Galaxy passed through 100 feet above decision height, a large flock of blackbirds (approximately 500 of them) flew directly into the C-5's path. The IP commanded an immediate missed approach in an attempt to fly over the swarm of birds, but the aircraft penetrated the flock and vice versa. Noting no damage, the crew completed the missed approach uneventfully and full-stopped the aircraft so maintenance could inspect it for possible damage. The crew was stunned when the maintenance troops informed them that *all four engines and both the left and right leading edge slats were damaged!* There was also evidence of multiple bird strikes (but no damage) to all the landing gear and the aircraft's lower fuselage.

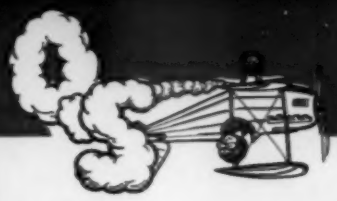
SNOW CHARGE

A SAC KC-135 crew got the shock of their lives recently while flying in the local radar traffic pattern at Northern Tier AFB. It seems the tanker was at approximately 3,000 feet AGL and flying through clouds and snow. As the aircraft approached the base turn, the crew saw an extremely bright flash through the front windscreen, and simultaneously felt a thump. A quick scan of flight instruments and aircraft electrical equipment revealed nothing amiss, so an uneventful landing was made. Postflight inspection of the aircraft revealed two holes in the radome.

An investigation determined this crew had experienced a classic case of static discharge—*not* a lightning strike as they first suspected. The aircraft met all the prerequisites for static buildup and discharge while flying in the local pattern. The tanker was being flown at the freezing level, was in the clouds, and was in visible precipitation. Although these conditions are also highly conducive to lightning strikes, there were no thunderstorms anywhere in the area so the possibility of lightning was disregarded. And we bet you thought these things only happened during the summer months.

Cargo Fuel Leak—Again

Another case of leaking cargo? Unfortunately, "yes." A Starlifter crew was enjoying an uneventful trip from Europe to the U.S., and as the C-141 started its descent, the loadmaster noticed a puddle of what appeared to be JP-4 under and behind a pallet. A closer look at a crate on the pallet revealed the sides of the crate were fuel-soaked to a height of approximately 2 feet! The loadmaster estimated that 2 to 3 quarts of fuel had leaked from the crate. Upon landing, the highly flammable crate was removed and broken down for inspection. Although properly certified, the contents, an H-3 refueling probe, still contained fuel and hadn't been properly purged.



Blazing Tires

The commercial Lockheed Tri-Star was lined up for a departure on an international passenger flight with the copilot making the takeoff. The heavy jet had a takeoff gross weight of 223,000 kilograms (491,625 pounds) with takeoff winds at 06 knots. On the roll, at 125 knots, both a master warning system caution and door open light illuminated. Making the reject call, the flight engineer correctly identified the aft cargo door as the cause. The copilot quickly retarded the throttles and applied the brakes. The captain observed the reject, yet didn't call for or apply reverse thrust. As a result, the spoilers were never deployed. The flight engineer also neglected to remind the crew of this critical omission.

Clearing the runway without incident, the captain requested the fire department to accompany the aircraft back to parking to observe wheel cooling. The local fire chief advised the crew that there appeared to be no problem with the wheels or tires.

There was one slight problem with the tires, however. During the taxi back, all eight main landing gear tires deflated via the fusible plugs. In addition, the number 2 right tire burst into flames. After the aircraft was stopped, the fire department extinguished the small blaze.

In this mishap, reverse thrust was not used to slow the hurtling L-1011. Kudos for the crew for handling the emergency? Not exactly. Seems this Tri-Star crew got an additional opportunity, soon after, to attend simulator training. The chosen simulator scenario—aborted takeoff procedures. After this mishap, the company formally issued a change to their crew checklists requiring the pilot making the takeoff to call "reverse thrust" and insure that spoilers are deployed.

—Adapted from British Airways
Air Safety Review

AFTER DEADLINES

C-5B CONTRACT SIGNED--The Air Force and Lockheed-Georgia Company signed a $609 million contract on December 31, 1982, for one C-5B aircraft with options for 49 more. The initial contract is for the initial C-5B and supporting data, support equipment, spares and long-lead time items. Work on the program began in late 1982 after award of a $50 million preproduction contract. MAC expects delivery of its first new production C-5B in December 1985. Final basing decision on the C-5Bs is currently under study. Information courtesy: HQ MAC/XPQA.

1983 BICENTENNIAL OF AIR AND SPACE FLIGHT--On January 3, 1983, President Ronald Reagan signed a proclamation designating 1983 as the "Bicentennial of Air and Space Flight." It was 200 years ago on November 21, 1783, when a French balloonist, Etienne de Montgolfier, made the first flight in history when he soared aloft in a hot air balloon at LaMuette, France. The balloon sailed over Paris for 25 minutes and traveled 5.5 miles. President Reagan has called upon all government agencies and the American people to observe this year with appropriate ceremonies and activities.

CHANGES IN MAC AIRCREW MANNING BRANCH--Contact the following HQ MAC rated resource managers for information about your flying assignment options: Capt Norm Schaule, Strategic Airlift, Autovon 638-4874; Capt George Klazynski, Tac Airlift, 2267; Capt Dave Spence, Rescue/Special Ops, 2267; Lt Donna Bullard, Mission Support (CT-39, 89 MAW, 58 MAS), 2267; and MSgt Ike Hill, Enlisted Aircrew, 5523.

MAC DEDICATED CREW CHIEFS--Located at 16 locations worldwide, MAC dedicated crew chiefs flew 96,000 hours in FY 82 in support of C-5, C-130 and WC-135 aircraft. Information courtesy: HQ MAC/LGMMC.

ADDITIONAL KC-10s PURCHASED--The Air Force has awarded a multiyear contract worth up to $2.7 billion to McDonnell Douglas Corporation, St. Louis, to buy 44 advanced tanker/cargo aircraft. Initial funding for FY 1983 is $867 million which will be used to purchase eight KC-10s and for advance funding of long-lead-time items. McDonnell Douglas has delivered 12 KC-10s to the Air Force. With the new order and planes already on order, the current Air Force schedule calls for delivery of 8 additional planes in 1983, 8 in 1984, 11 in 1985, 12 in 1986, and 9 in 1987.

NEW CHANGES AT THE MAC IG--Effective 1 March, Brigadier General Philip S. Prince became the new commander of the Aerospace Rescue and Recovery Service replacing Major General William J. Mall who moved up to become the new commander, 23d Air Force. The new MAC Inspector General is Colonel Paul A. Harvey, a brigadier general selectee, who comes to Scott from his position as commander, 436 MAW, Dover AFB, Delaware. We at TMF bid a reluctant farewell to General Prince, a true friend of safety, and warmly welcome Colonel Harvey to the MAC IG.

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